

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:-

1. A deflector element (14) for use with an electrical connector (10) attachable to an electrical cable (16), the deflector element having a deflector surface (88a) and being  
5 attachable to the cable when used with said connector, so as to be slidable on the cable to a first position adjacent the connector such that the deflector surface is angularly disposed with respect to the direction of extent of the cable so as to converge towards the cable away from the connector, for deflecting electric cabling around the connector when the connector is by pulling of the lead moved through interstices in electric cabling, and being  
10 slidable to a second position on the cable so as to be spaced away from the connector. At the second position, the deflector element may allow access to electrical contacts (82) of the connector.
2. A deflector element as claimed in claim 1 having pocket portions for receiving  
15 contact portions of the connector.
3. An electrical connector having a deflector element as claimed in claim 1 or claim 2.
4. An electrical connector element (50) having a plurality of insulation displacement  
20 contacts (54), and a plurality of electrical contacts (82), the insulation displacement contacts and the electrical contacts being interconnected by electrical conductors (tracks 78), the connector element being receivable in a socket structure (44) of a connector body of an electrical connector (10) such that the insulation displacement contacts (54) displace electrical insulation (72) of insulated wires (70) received by the connector body to  
25 establish electrical connection between electrical conductors (74) of the wires and the insulation displacement contacts (54). This connector element may simplify coupling of the electrical contacts to wires leading to the connector.
5. An electrical connector element as claimed in claim 4, wherein the connector  
30 element is formed by a laminar insulative substrate which carries said insulation displacement contacts.

6. An electrical connector (10) having a first portion (30) which has a cable receiving portion (36), for receiving an end portion of an electrical cable (16), so that the cable extends away from the first portion (30), at a first side (49) thereof, in a direction transverse to the first portion (30), and insulated wires (70) of the cable (16) are received by the first portion (30), said first portion (30) having, at a location spaced from the cable receiving portion (36), mounting structure (44) which receives a first end portion (55) of a connector element (50), such that insulation displacement contacts (54) of the connector element receive and make electrical contact with said wires (70), said connector element (50) having, at a second end portion (57) opposite said first end portion (55), electrical contacts (82) for making electrical connection to electrical contact members (120) of a mating connector device, said connector element (50) extending from said first portion (30) of the connector at said first side (49) thereof, so as to be generally parallel to said transverse direction.

15

7. The connector (10) is arranged for mating assembly to a said connector device in the form of a connector module (100) having openings (122) for receiving said electrical contacts (82); said electrical connector (10), when assembled to the connector module (100), being arranged with said side (49) of the first portion (30) adjacent to and extending transversely over part of the module (100) adjacent said openings (122), and with the connector element (50) extending therefrom into the module (100) so that said electrical contacts (82) of the connector engage with the contact members (120) of the module, and with said cable receiving portion (36) positioned for receiving the cable (16) such that it extends from the first portion (30) adjacent a side of the module (100).

25

8. An electrical connector (10) and cable (16), the connector having a first portion (30) which has a cable receiving part (36), receiving an end portion of the cable, so that the cable extends away from the first portion (30), at a first side (49) thereof, in a direction transverse to the first portion, and insulated wires (70) of the cable are received by the first portion, said first portion (30) having, at a location spaced from the cable receiving portion (36), mounting structure (44) which receives an end portion (55) of a connector element

30

(50), such that insulation displacement contacts (54) of the connector element (50) receive and make electrical contact with said wires (70), said connector element (50) having, at an end portion (57) opposite said first end portion (55), electrical contacts (82) for making electrical connection to electrical contact means (members 120) of a mating connector device (module 100), said connector element (50) extending from said first portion (30) of the connector at said first side (49) thereof, so as to be generally parallel to said transverse direction.

9. Insulation displacement contact (54) having structure defining a slot (58), formed between two spaced opposed portions (60) of the structure, for receiving an insulated wire (70), by lateral movement of the wire (70), so that the wire is gripped between the opposed portions (60) and insulation (72) of the wire is displaced by engagement with at least one of the opposed portions so that electrical connection is established between an inner conductor (74) of the insulated wire and said at least one opposed portion, wherein the opposed portions are formed from insulative material, a conductive edge portion (62) being disposed on the insulative material at said at least one opposed portion at a location thereof for making said electrical connection.

10. An insulation displacement contact as claimed in claim 9, wherein said conductive edge portion (62) is disposed on the insulative material at said at least one opposed portion at an edge surface thereof defining a side of the slot.

11. An insulation displacement contact as claimed in claim 9 arranged for displacement of the wire insulation (72) by engagement with both of the opposed portions (60), a conductive edge portion (62) being disposed on the insulative material at the other of said opposed portions, for establishing electrical connection between said inner conductor and the other said opposed portion.

12. An insulation displacement contact as claimed in claim 10, wherein the conductive edge portion (62) is disposed on said at least one opposed portion at least one opposed portion (60) at an edge surface thereof defining a side of the slot.

13. An insulation displacement contact as claimed in claim 11, wherein the conductive edge portions (62) on the insulative material, at each said opposed portion (60) are disposed at edge surfaces of the opposed portions which surfaces define respective sides of the slot.

14. An insulation displacement contact as claimed in any preceding claim, wherein said structure is formed from a laminar insulative substrate (52) to which the or each said conductive edge portion (62) is applied.

10

15. An insulation displacement contact as claimed in claim 14, in the form of a printed circuit board, conductive tracks (78) being formed on the printed circuit board and electrically coupled to the or each said conductive edge portion (62).

15 16. A method of forming an electrical connector from a hollow body and a portion for receiving a connector element having insulation displacement contacts at one end electrically coupled to contacts on fingers at the other end, the fingers extending from openings in the hollow body, the body being in two parts, one having said openings and an entry passageway for an electrical cable having insulated wires, and the other having a socket structure for receiving said one end of said connector element, and said wires, the method including the steps of:

- 20 (a) passing said wires through said entry passageway and arranging them to be received at said socket structure,
- (b) assembling said connector element so that said one end is received and retained in said socket structure such that insulation of the wires is displaced by said insulation displacement contacts to establish electrical connection to conductors of the wires and thus to the finger contacts,
- 25 (c) assembling the body parts so that the connector element is retained in said body with said fingers extending externally thereof, and said finger contacts are positioned externally.
- 30

- 22 -

17. An electrical connector having a hollow body receiving a connector element having insulation displacement contacts at one end electrically coupled to contacts on fingers at the other end, the fingers extending from openings in the hollow body, the body being in two parts, one having said openings and an entry passageway for an electrical cable having  
5 insulated wires and the other having a socket structure, said wires passing through said entry passageway and being received at said socket structure, said connector element at said one end being received and retained in said socket structure such that insulation of the wires is displaced by said insulation displacement contacts to establish electrical connection to conductors of the wires and to the finger contacts, the connector element  
10 being retained in said body with said fingers extending externally thereof, so that said finger contacts are positioned externally.

DATED this 23<sup>rd</sup> day of July, 2002

KRONE GMBH

15 By its Patent Attorneys

Davies Collison Cave